ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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217/785-1705

CONSTRUCTION PERMIT -- PSD APPROVAL
NSPS - NESHAP SOURCE

PERMITTEE

Hoosier Energy REC, Inc.
Attn: Angie Lee
7398 North State Road 37
Post Office Box 908
Bloomington, Indiana 47402

Application No.: 11050042 I.D. No.: 141017AAG
Applicant's Designation: Landfill Engines
Date Received: May 23, 2011 Date Issued: December 23, 2013
Subject: Landfill Gas-to-Energy Facility
Location: 8290 Highway 251 South, Davis Junction

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission units and air pollution control equipment consisting of a landfill gas-to-energy facility, as described in the above referenced application. This permit is granted based upon and subject to the findings and conditions that follow.

In conjunction with this permit, approval is given with respect to the federal regulations for Prevention of Significant Deterioration of Air Quality (PSD) for the facility, as described in the application, in that the Illinois EPA finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the federal Clean Air Act, the federal PSD rules at 40 CFR 52.21, and a Delegation of Authority agreement between the USEPA and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with provisions of 40 CFR 124.19. This approval is based upon the findings that follow. This approval is subject to the following conditions. This approval is also subject to the general requirement that the facility be developed and operated consistent with the specifications and data included in the application and any significant departure from the terms expressed in the application, if not otherwise authorized by this permit, must receive prior written authorization from the Illinois EPA.

If you have any questions on this permit, please call Bob Smet at 217/785-1705.

Raymond E. Pilapil

Raymond E. Pilapil Date Signed: December 23, 2013
Acting Manager, Permit Section
Division of Air Pollution Control

REP:RPS:psj

FINDINGS

1a. Hoosier Energy REC, Inc. ("Hoosier Energy") has requested a construction permit for a gas-to-energy facility (the affected facility) that would combust landfill gas (LFG) collected from the existing Orchard Hills Landfill, near Davis Junction. The affected facility would have six engines and the capacity to generate about 16 MW of electricity that would be fed to the grid.

Before being used as fuel in the engines, LFG collected from the landfill would first be processed in a treatment system to prepare the LFG for use as fuel, including compression, filtration and dewatering. A sulfur removal system would then be used if needed to remove hydrogen sulfide (H_2S) from the fuel gas before it is used in the engines. This sulfur removal system would not be a source of emissions. Another system would be present to remove siloxanes (organic silicon compounds) from the fuel gas. This siloxane removal system would have emissions of off-gas from periodic regeneration of the adsorption beds, which would be controlled with a combustor.

b. The existing Orchard Hills Landfill is a major source under the PSD rules. This landfill and the proposed gas-to-energy facility are considered to be a single source pursuant to 40 CFR 52.21(b)(6), 35 IAC 211.6130, and Section 39.5(1) of Illinois' Environmental Protection Act.

c. This project would not entail an increase in the waste disposal capacity of the Orchard Hills Landfill.

2. The affected facility would be located in Ogle County, an area that is designated attainment for all criteria pollutants.

3a. Under the PSD rules, the affected facility will be a major modification with potential emissions of nitrogen oxides (NOx), carbon monoxide (CO), particulate matter (PM, PM_{10}, $PM_{2.5}$), volatile organic material (VOM) and municipal solid waste landfill emissions (measured as nonmethane organic compounds or NMOC) that are significant. (Refer to Attachment 1 for a summary of the potential emissions of the affected facility.)

b. The affected facility would not be a major modification under the PSD rules for emissions of sulfur dioxide (SO_2) or greenhouse gases (GHG).

i. For SO_2, this is because this permit sets limits on operation and SO_2 emissions of the facility and other related requirements to ensure that the facility's SO_2 emissions would not be significant. (See limits for SO_2 emissions in Conditions 1.3, 2.2.6 and 2.3.6 and various provisions of Section 2.1 of this permit.)

ii. For GHG, this is because the emissions of GHG from the facility other than biogenic carbon dioxide (CO_2) will not be significant. In this regard, the GHG emissions of the facility

will primarily be biogenic CO_2, from the combustion of gas generated by decomposition of municipal solid waste, and USEPA has deferred regulation of biogenic CO_2 emissions under the PSD rules.

4. After reviewing the materials submitted by Hoosier Energy, the Illinois EPA has determined that the affected facility will (i) comply with applicable Board emission standards, (ii) comply with applicable federal emission standards, and (iii) utilize Best Available Control Technology (BACT) on emission units as required by PSD.

   Note: The determinations of BACT made by the Illinois EPA for the various emission units at the proposed facility are generally contained in the permit conditions for specific emission units that are headed by "Control Technology Determinations (BACT)".

5. The air quality analysis submitted by Hoosier Energy and reviewed by the Illinois EPA shows that the proposed project will not cause or contribute to violations of the National Ambient Air Quality Standards for NO_2, PM_{10}, $PM_{2.5}$, CO and ozone. The air quality analysis also shows compliance with the Class II allowable increment levels established under the PSD rules.

6. The Illinois EPA has determined that the application for the affected facility complies with all applicable state air pollution regulations and the PSD rules, 40 CFR 52.21.

7. A copy of the application, the project summary prepared by the Illinois EPA and a draft of this construction permit, were placed in a nearby public repository, and the public was given notice and an opportunity to examine this material and to participate in a public hearing and to submit comments on these matters.

SECTION 1: SOURCE-WIDE PERMIT CONDITIONS

CONDITION 1.1: EFFECT OF PERMIT

a. This permit does not relieve the Permittee of the responsibility to comply with all local, state and federal regulations that are part of the applicable Illinois' State Implementation Plan, as well as all other applicable federal, state and local requirements.

b. In particular, this permit does not relieve the Permittee from the responsibility to carry out practices during the construction and operation of the affected facility, such as application of water or dust suppressant sprays to roadways, as necessary to minimize fugitive dust and prevent an air pollution nuisance from fugitive dust, as prohibited by 35 IAC 201.141.

CONDITION 1.2: VALIDITY OF PERMIT AND COMMENCEMENT OF CONSTRUCTION

a. This permit shall become invalid if construction is not commenced within 18 months after this permit becomes effective, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time, pursuant to 40 CFR 52.21(r)(2). The Illinois EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This condition supersedes Standard Condition 1.

b. For purposes of the above provisions, the definitions of "construction" and "commence" at 40 CFR 52.21 (b)(8) and (9) shall apply, which requires that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (See also the definition of "begin actual construction," 40 CFR 52.21 (b)(11).)

CONDITION 1.3: EMISSION LIMITS FOR THE AFFECTED FACILITY

The emissions of the different parts of the affected facility and the affected facility as a whole shall not exceed the limits in Attachment 1.

CONDITION 1.4: FEDERAL REQUIREMENTS FOR MUNICIPAL SOLID WASTE LANDFILLS

a. i. A. The Permittee shall process the gas accepted from the Orchard Hills Landfill in a LFG treatment system that meets site-specific criteria established by USEPA for treatment of landfill gas (LFG) to comply with 40 CFR 60.752(b)(2)(iii)(C) of the New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills, 40 CFR 60 Subpart WWW (the Landfill NSPS).

Note: USEPA has made site-specific determinations that treatment of LFG by compression, dewatering, and filtration with a 10 micron filter constitutes treatment for purposes of 40 CFR 60.752(b)(2)(iii)(C).

B. Any atmospheric vents from the LFG treatment system shall be directed to the flares at the affected landfill or other

control devices, which must comply with the requirements of 40 CFR 60.752(b)(2)(iii)(A) or (B).

ii. As a result of the above requirements, this permit is issued based on the affected facility, including sulfur removal system, siloxane removal system and engines, not being subject to the emission standards or other requirements of the Landfill NSPS.

Note: The requirements of the Landfill NSPS are applicable to the affected facility, because the Orchard Hills Landfill is subject to this NSPS and the affected facility would be located at and receive gas collected from the Orchard Hills Landfill.

b. i. The LFG treatment system is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills, 40 CFR 63 Subpart AAAA (Landfill NESHAP). Pursuant to the Landfill NESHAP, 40 CFR 63.1930, the Permittee shall comply with the requirements of 40 CFR 63.6(e)(3), related to development and implementation of a startup, shutdown and malfunction plan for the LFG treatment system.

Note: The LFG treatment system is subject to the Landfill NESHAP because the Orchard Hills Landfill is subject to this NESHAP and the Landfill NSPS.

ii. As the LFG treatment system is subject to the Landfill NESHAP, the Permittee shall at all times, to the extent practical, maintain and operate the affected facility, including the sulfur removal system and the siloxane removal system, in a manner consistent with safety and good air pollution control practice for minimizing emissions, as required by 40 CFR 63.6(e)(1).

c. The Permittee shall maintain an operating log or other records identifying any period when gas is combusted by the affected facility that was not properly treated by the LFG treatment system, with date, time, duration, description and explanation.

CONDITION 1.5: STORAGE TANKS FOR LUBRICATING OIL

a. This permit is issued based on negligible emissions of VOM from storage tanks for lubricating oil. For this purpose, total VOM emissions from such tanks shall not exceed nominal emission rates of 0.40 ton/year.

Note: Condition 1.5 constitutes the determination of BACT for these tanks, as required under the PSD rules.

CONDITION 1.6: GOOD AIR POLLUTION CONTROL PRACTICES

The Permittee shall operate and maintain all emission units at the affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice, as follows:

a. At all times, including periods of startup, shutdown, malfunction or breakdown, operate as practicable to minimize emissions.

b. Conduct routine inspections and perform appropriate maintenance and repairs to facilitate proper functioning of equipment and minimize or prevent malfunctions and breakdowns.

c. Install, calibrate and maintain required monitoring devices and instrumentation in accordance with good monitoring practices, following the manufacturer's recommended operating and maintenance procedures or such other procedures as otherwise necessary to assure reliable operation of such devices.

CONDITION 1.7: COMPLIANCE WITH EMISSION STANDARDS AND EMISSION LIMITS

a. The emission limits set by this permit, including BACT limits and other permit limits for emissions, apply at all times unless otherwise specified in a particular provision.

b. i. Unless otherwise provided by applicable rules, emission standards for particulate matter (PM) under applicable regulations that are referenced in the conditions of this permit address only filterable particulate, as would be measured by USEPA Method 5 or other appropriate USEPA Test Methods.

ii. Unless otherwise provided by applicable provisions of this permit, emissions limits for PM_{10} set by this permit address both filterable and condensable particulate. These emission limits for PM_{10} also serve to address emissions of $PM_{2.5}$.

c. When performance or emission testing is conducted, compliance with hourly limits set by this permit shall be determined from the average of the test results, commonly three runs, each nominally one hour in duration.

d. During periods of operation other than performance testing, compliance with the emission limits set by this permit shall be determined from operating information for emission units, including information for both the amount of material processed and the operational condition of the units and their control devices, and from appropriate values for emission rates or emission factors that do not understate actual emissions of the units as they were actually operated. For this purpose, for emission units for which performance testing has been conducted, values for emission rates or emissions factors developed from the most recent testing for an emission unit shall be used unless it is determined that this would understate actual emissions of the unit, either as a general matter or for a particular period of operation, in which case alternative rates or factors shall be developed and used consistent with the principles of credible evidence.

e. i. Except as provided below or unless otherwise specified in a particular provision, compliance with annual limits established by this permit shall be determined from a rolling total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12 month total), and

shall consider all emissions, including emissions during startup, shutdown, and malfunction and breakdown.

ii. For the first year (12 months) of operation, compliance shall be determined for a cumulative total of monthly data, i.e. from the sum of the data for the current month and data for all preceding months.

CONDITION 1.8: RECORDS FOR MONITORING SYSTEMS AND INSTRUMENTATION

a. The Permittee shall keep records of the data measured by required monitoring systems and instrumentation. Unless otherwise provided in a particular condition of this permit, the following requirements shall apply to such recordkeeping:

i. For required monitoring systems, data shall be automatically recorded by a central data system, dedicated data logging system, chart recorder or other data recording device. If an electronic data logging system is used, the recorded data shall be the hourly average value of the particular parameter for each hour. During periods when the automatic recording device is out of service, data shall be recorded at least once per shift for periods when the associated emission unit(s) is in service.

ii. For required instrumentation, the measured data shall be recorded manually at least once per day, unless otherwise specified, with data and time both recorded, for periods when the associated emission unit(s) are in service, provided however that if data from an instrument is recorded automatically, the above provisions for recording of data from monitoring systems shall apply and manual recording of data is not required.

b. The Permittee shall keep records for the operation, calibration maintenance and repair of required monitoring systems and instrumentation. These operating records shall, at a minimum, identify the date and duration of any time when a required monitoring instrument or device was not in operation, with explanation; the performance of manual quality control and quality assurance procedures for the system; and maintenance and repair activities performed for the system.

c. The Permittee shall maintain a file containing a copy of the specifications for each required monitoring device or instrument and the recommended operating and maintenance procedures for the device as provided by its manufacturer.

CONDITION 1.9: RECORDS FOR OPACITY MEASUREMENTS

a. The Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9 for emission units at the affected facility that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to this permit or a request from the Illinois EPA, or otherwise the

identity of the observer, a description of the measurements that were made, the operating condition of the affected operations, the observed opacity, and copies of the raw data sheets for the measurements.

CONDITION 1.10: RETENTION AND AVAILABILITY OF RECORDS

a. Unless otherwise specified in a particular provision, records required by this permit shall be kept at the facility or be accessible at the facility.

b. Where a condition requires that a file be kept containing certain information, the file shall be updated as needed to keep the information current. Each new version or update shall be marked with the date that it was prepared and shall become effective on that date unless a later "effective date" is also specified.

c. The Permittee shall retain all records and logs required by this permit for at least five years from the date of entry (unless a longer retention period is specified by a particular provision), keep the records at a location at the affected facility that is readily accessible to the Illinois EPA and USEPA, and make records available for inspection and copying by the Illinois EPA or USEPA upon request.

d. i. In response to an Illinois EPA or USEPA request for records, during the course of an inspection of the facility, the Permittee shall provide the following information to the Illinois EPA or USEPA or make such information available for copying:

A. Copies of written records kept at the facility during the inspection.

B. Copies of any records retained in an electronic format that are accessible at the facility.

ii. As such information is not available at the facility, the Permittee shall provide such information in a reasonable time frame.

CONDITION 1.11: ADDRESSES FOR THE ILLINOIS EPA

a. Reports and notifications required by this permit shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance and Enforcement Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811 Fax: 217/524-4710

b. A copy of all required reports and notifications, except the Annual Emission Report required by 35 IAC Part 254, shall also be sent to the Illinois EPA Air Regional Field Office at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control
5407 North University Street, Arbor 113
Peoria, Illinois 61614

Telephone: 309/693-5461 Fax: 309/693-5467

CONDITION 1.12: AUTHORIZATION TO OPERATE EMISSION UNITS

a. i. Under this permit, each engine may be operated for a period that ends one year (365 days) after initial startup to allow for equipment shakedown and required emissions testing. This period may be extended by Illinois EPA upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing.

ii. The remainder of the affected facility, excluding the engines, may be operated under this construction permit for a period that ends one year after initial startup of the first engine. This period of time may be extended by the Illinois EPA for up to an additional 365 days upon written request by the Permittee as needed to reasonably accommodate unforeseen difficulties experienced during shakedown of the facility.

b. Upon successful completion of required emission testing, the Permittee may continue to operate emission units at the affected facility as allowed by Section 39.5(5) of the Environmental Protection Act.

c. These conditions supersede Standard Condition 6.

CONDITION 1.13: STANDARD CONDITIONS

Standard conditions for issuance of construction permits, attached hereto, shall apply to this project, unless specifically superseded by other conditions in the permit. (Refer to Attachment 2.)

UNIT-SPECIFIC CONDITIONS FOR PARTICULAR EMISSION UNIT(S)

SECTION 2.1: UNIT-SPECIFIC CONDITIONS FOR THE SULFUR REMOVAL SYSTEM

2.1.1 Introduction

The sulfur removal system (affected sulfur system) will function as a control device for the SO_2 emissions of the affected facility, as it reduces the sulfur content of the fuel gas used in the engines at the facility. The system will absorb and remove hydrogen sulfide from the gas from the landfill before the gas is used as fuel in the engines. Depending upon the design of the system, this system may also regenerate the sorbent material by a chemical or biological process, producing a by-product sulfur stream for disposal.

2.1.2 Design and Operational Requirements for the Affected Sulfur System

a. Other than the discharge air stream from the biological reactor vessel(s), the affected sulfur system shall not have any release of regulated pollutants directly to the atmosphere, i.e., any releases of fuel gas from the affected sulfur system shall be ducted back to the fuel gas system.

b. The affected sulfur system shall be designed, considering the expected sulfur content of the incoming gas and typical operation of this system, to reduce the hydrogen sulfide (H_2S) in the treated gas such that the sulfur content of the treated gas is no more than 140 ppmv.

c. The total design capacity of the affected sulfur system shall be at least 7.5 million scf/day.

d. The affected sulfur system shall be designed so that maintenance of the system can be conducted without bypassing of unprocessed gas around this system.

e. The Permittee shall at all times maintain and operate the affected sulfur system in a manner consistent with good air pollution control practice for minimizing emissions.

2.1.3 Emission Limits

a. This permit is issued based on negligible emissions of H_2S and total reduced sulfur directly from the affected sulfur system. For this purpose, emissions of each pollutant shall not exceed 0.005 pounds/hour and 0.022 tons/year.

2.1.4 Monitoring Requirements for the Affected Sulfur System

For the affected sulfur system, the Permittee shall install, operate and maintain monitoring devices for key operating parameters of the affected system, e.g., operating temperatures, liquid flow rates,* and pH.

* Alternatively, if equipment normally operates at a constant flow rate, the Permittee may install, operate and maintain alarms for interruptions in the liquid flow and keep records for the occurrence of any alarms.

2.1.5 Instrumentation and Monitoring for the Sulfur Content of Fuel Gas

a. i. The Permittee shall install, operate and maintain instrumentation to measure the sulfur content of the processed gas from the affected sulfur system (the fuel gas), with sulfur content measured either as H_2S or as total sulfur, as H_2S or sulfur by volume, as follows:

i. The Permittee shall operate this instrumentation in accordance with good monitoring practices, including routine maintenance and repair, either in accordance with the manufacturer's recommended procedures or other written procedures developed by the Permittee.

ii. Measured data shall be automatically recorded at least once per operating day.

iii. Upon written request by the Illinois EPA, the Permittee shall have the performance of this instrument evaluated within 30 days by conducted at least five simultaneous measurements of the sulfur content of the gas by laboratory analysis.

b. Beginning 15 months after startup of the affected facility, unless the sulfur content of gas that has been processed by the affected sulfur system, as H_2S, is "consistently" no more than 120 ppm, the Permittee shall promptly install and thereafter operate and maintain a continuous monitoring system (CMS) for the sulfur content of processed gas, with sulfur content measured either as H_2S or as total sulfur, as sulfur, by volume, as follows. For this purpose, the sulfur content of processed gas shall be considered to be consistently less than 120 ppm if 80 percent of the periodic measurements of the sulfur content of processed gas conducted pursuant to Condition 2.1.5(a), during the preceding quarter are no more than 120 ppm. The Permittee may also elect to operate a CMS as an alternative to use of instrumentation as specified by Condition 2.1.5(a)

i. The Permittee shall operate this CMS in accordance with good monitoring practices, including regular calibration of the CMS and routine maintenance and repair of the CMS, either in accordance with the manufacturer's recommended procedures or other written procedures developed by the Permittee.

ii. Upon written request by the Illinois EPA, the Permittee shall within 90 days have the performance of the CMS evaluated compared to Performance Specification 7 of Appendix B to 40 CFR Part 60 using either of USEPA Method 11 or Method 15.

c. If the affected sulfur system is not in routine service because the sulfur content of LFG collected from the landfill is less than 130 ppm, the above requirements of Condition 2.1.5(a) shall apply to the LFG from the landfill as delivered to or received at the facility.

d. i. If the Permittee elects to operate instrumentation or conduct monitoring for the H_2S content of the fuel gas, as provided above, the Permittee shall conduct evaluation programs to establish a correlation between the measured H_2S content of fuel gas and the total sulfur content of the gas, as follows. An evaluation program shall consist of collection of data for the total sulfur content of the fuel gas as determined by sampling and analysis using standard methods and simultaneous collection of data for the H_2S content of the gas by the monitoring system, with this data then used to develop a linear equation, as described in Attachment 2, to calculate the total sulfur content of the fuel gas from the measured H_2S content of the fuel gas. This data shall be collected for at least 10 separate days over a period of no more than 20 days.

A. The initial evaluation program shall be completed within 180 days of the initial startup of the affected facility or 90 days after the facility begins operating at the maximum rate that it is expected that the facility will operate during its first year, whichever occurs first.

B. A subsequent evaluation program shall be completed between 12 and 15 months of the initial evaluation program.

C. A new evaluation program shall also be completed within 100 days of a written request from the Illinois EPA.

ii. In conjunction with the evaluations required by Conditions 2.1.5(d)(i)(A) and (B) and if requested by the Illinois EPA for evaluations conducted pursuant to Condition 2.1.5(d)(i)(C), the Permittee shall conduct sampling and analysis of the raw gas entering the sulfur system for its total sulfur (ppm) using standard methods. This activity may be combined with the initial sampling and analysis of fuel gas required by Condition 2.3.9.

iii. For these evaluations, the Permittee shall submit a plan and notification to the Illinois EPA as provided for by Conditions 3.1(a) with (b), with the timing for such submittal based on the date that the evaluation would begin. The Permittee shall also submit reports to the Illinois EPA in accordance with Condition 3.1(c).

2.1.6 Recordkeeping Requirements

The Permittee shall maintain the following records for the affected sulfur system:

a. A file containing the manufacturer's specifications for the affected sulfur system, i.e., design sulfur removal efficiency and sulfur content, as H_2S, of treated gas, and the manufacturer's recommended operating and maintenance procedures for the system.

b. The typical sulfur content of sulfur-laden material recovered by the affected sulfur system (percent by weight), with supporting documentation.

c. Operating records for the affected sulfur system that shall include the following:

   i. The total amount of gas processed, on a daily basis.

   ii. Gas flow from this system during startup or upsets, by type of occurrence.

   iii. The amount of sulfur removed from the processed gas (tons sulfur/month), with supporting data and calculations.

   iv. An operating log or other records that include:

      A. Status of this system, including recorded operating parameters of the system.

      B. Adjustments of settings for any operating parameters.

      C. Identification of any period when this system was not operating or operated improperly with a detailed explanation, if other than because the sulfur content of the incoming LFG is less than 130 ppm, with explanation and an estimate of the increase in sulfur content of processed gas that resulted, if not otherwise identified in the sampling and analysis conducted for the sulfur content of processed gas.

d. Records related to inspection/maintenance of the affected sulfur system:

   i. Date of inspection and observed condition of this system.

   ii. Date and description of maintenance performed.

e. Records for the sulfur and heat content of the LFG received at the facility*, based on representative sampling and analysis conducted on at least a monthly and quarterly basis for sulfur and heat content, respectively.

* This data may be collected by the associated landfill and records for this data need not be kept at the facility.

2.1.7 Reporting Requirements

a. At least 60 days before commencing on-site construction of the facility, the Permittee shall submit detailed information to the Illinois EPA concerning the selected sulfur removal system, including the type of system, the manufacturer, the manufacturer's specifications for the capacity (scf/hour) and removal of hydrogen sulfide (percent or exit concentration in ppmv), process flow diagram, and the manufacturer's recommended operation and maintenance procedures.

b. The Permittee shall submit annual report to the Illinois EPA on the performance of the affected sulfur system. The report shall include, at a minimum, the total amount of gas processed and the sulfur concentration in the processed gas. These reports shall be submitted at the same time as the Annual Emission Report for the affected facility.

c. If there is any deviation from the requirements of this permit for the affected sulfur system, the Permittee shall notify the Illinois EPA in a quarterly report unless otherwise specified in the CAAPP permit for the source. These reports shall include the information specified in Condition 3.4.

d. The Permittee shall notify the Illinois EPA if the normal operational status of affected sulfur system will be changed because of the sulfur content of the LFG collected from the landfill, i.e., this system will be taken out of routine service because the sulfur content has decreased to less than 130 ppm or this system will be returned to routine service because the sulfur content is increasing.

SECTION 2.2: UNIT-SPECIFIC CONDITIONS FOR THE SILOXANE REMOVAL SYSTEM (SRS) WITH ENCLOSED COMBUSTOR

2.2.1 Introduction

The siloxane removal system (the affected siloxane system) may be used to further process the fuel gas (i.e., treated LFG) to remove siloxanes (organic silicon compounds) before the gas is used as fuel at the gas-to-energy facility. Without this system, a coating of silica could build up on the pistons in the engines increasing the amount of maintenance that is needed.

The affected siloxane system would have an off-gas stream from the periodic regeneration of the adsorption beds in this system. During each regeneration cycle, one of the adsorption beds in this system would be isolated from the flow of LFG and electrically heated to drive off accumulated siloxanes and other organic compounds. The resulting off-gas stream would then be controlled by an enclosed combustor (the affected combustor). The fuel for the affected combustor would be fuel gas.

2.2.2 Control Technology Determination (BACT)

a. For emissions of VOM, the affected combustor shall be designed and operated to reduce emissions of VOM by 98 weight percent or to an outlet VOM concentration of less than 20 ppm by volume (ppmv), dry basis as hexane at 3 percent oxygen, at all times when off-gas is routed to the combustor.

b. For emissions of NOx, the fuel burners in the affected combustor shall be designed to emit no more than 0.08 lb/mmBtu.

c. For emissions of CO and PM, operation shall be in accordance with good combustion practices.

2.2.3 Applicable State Emission Standards

a. The affected combustor is subject to 35 IAC 212.123(a), which provides that no person shall cause or allow emissions of smoke or other particulate matter from any emission unit to exceed 30 percent opacity, except as allowed by 35 IAC 212.123(b) and 212.124.

b. The affected combustor is subject to 35 IAC 214.301, which provides that no person shall cause or allow the emissions of sulfur dioxide (SO_2) into the atmosphere from any process emission unit to exceed 2000 ppm.

2.2.4 Nonapplicability Provisions

The affected siloxane system is not major for emissions of hazardous air pollutants (HAPs), i.e., as limited by this permit, the potential emissions of this system will be less than 10 tons of an individual HAP and less than 25 tons in aggregate for total HAPs. Therefore, a case-by-case determination of Maximum Achievable

Control Technology (MACT) is not required for this system pursuant to Section 112(g) of the federal Clean Air Act.

2.2.5 Design and Operational Requirements for the Affected Siloxane System

a. The design capacity of the affected combustor shall not exceed 3500 scfm of off-gas.

b. When off-gas is sent to the combustor from the affected siloxane system, other than during emission testing for VOM emissions, the temperature in the combustion chamber of the affected combustor shall be maintained as follows:

i. Before the initial performance testing required by Condition 2.2.6 is conducted, the temperature shall be consistent with the temperature recommended by the manufacturer.

ii. After the initial performance testing required by Condition 2.2.6 is conducted, except as provided by Condition 2.2.5(c)(iii) below, the temperature(s), on a 3-hour average, rolled hourly, shall be no more than 28°C below the average temperature(s) measured during the most recent performance test at which compliance with Condition 2.2.2(a) was demonstrated.

iii. During an evaluation of different operating temperature(s) for the combustor, provided that the evaluation is reasonable and that the Permittee has provided advance notice to the Illinois EPA for the evaluation, describing the planned evaluation, including the reason, objective and expected duration, the temperature(s) shall be consistent with good air pollution control practice.

c. The Permittee shall operate and maintain the affected siloanxe system and affected combustor according to written procedures.

d. The Permittee must at all times operate and maintain the affected siloxane system and affected combustor in a manner consistent with safety and good air pollution control practices for minimizing emissions.

2.2.6 Emission Limits

a. i. The emissions from the affected combustor shall not exceed the following limits. Hourly limits for NOx and SO_2 shall apply on a 1-hour average basis, except during emission testing, as addressed by Condition 1.7(c). Hourly limits for other pollutants shall apply on a 3-hour average basis.

Pollutant	Limits	
	Lbs/Hour	Tons/Year
NOx	1.10	4.8
CO	2.70	12.0
PM/PM_{10}	*	5.4

Pollutant	Limits	
	Lbs/Hour	Tons/Year
VOM	*	3.4
SO_2	0.70	3.1
Total HAPs	0.79	0.4

* See Condition 2.2.6(a)(ii) and (iii).

ii. The short-term VOM emissions from the affected combustor, in pounds per regeneration cycle, shall not exceed 33.3 or a value calculated as follows, whichever is more stringent.

Value = 581 ÷ (N + 1)

where N is the greatest number of complete regeneration cycles that would occur in any month based on the current composition of the LFG that is being processed by the affected siloxane system and the Permittee's current operating procedures for this system.

iii. The short-term PM/PM_{10} emissions from the affected combustor, in pounds per regeneration cycle, shall not exceed 46.2 or a value calculated as follows, whichever is more stringent.

Value = 717 ÷ (N + 1)

where N is the greatest number of complete regeneration cycles that would occur in any month based on the current composition of the LFG that is being processed by the affected siloxane system and the Permittee's current operating procedures for this system.

b. There shall be no atmospheric vents directly from the affected siloxane system, i.e., vents that are not controlled by the affected combustor.

2.2.7 Testing Requirements

a. The Permittee shall have performance testing conducted by a qualified testing service for the affected combustor for emissions during regeneration, i.e., while off-gas is being sent to the combustor from regeneration of an adsorption bed in the affected siloxane system, as follows:

i. A. Within 180 days of initial startup of the affected siloxane system or such later date agreed to by the Illinois EPA,* the Permittee shall have initial performance testing conducted for the affected combustor for emissions of VOM, NOx CO and PM/PM_{10}.

B. In conjunction with this testing, the Permittee shall have observations of opacity conducted for the affected combustor by qualified observer(s) in accordance with USEPA Method 9.

ii. Within 90 days of a written request from the Illinois EPA or such later date agreed to by the Illinois EPA,* the Permittee shall have an additional performance testing for VOM, NOx, CO and/or PM/PM_{10}, and/or opacity observations conducted, as specified in the request.

* As reasonably needed to enable testing to be conducted during representative operation of the affected siloxane system and to accommodate events that act to delay testing, the Illinois EPA may, at its discretion, provide additional time for the performance of this testing upon written request by the Permittee. In particular, the timing for initial testing may be extended if the shakedown of the facility has not been completed, e.g., additional engines are still being brought into service and the affected siloxane system is processing less gas than it will normally process.

b. i. Emission testing shall be conducted using USEPA Methods, including the following methods, unless use of other standard method(s) is approved by the Illinois EPA as part of its review of the test plan. (Refer to 40 CFR 60, Appendix A for USEPA's Test Methods.)

Volatile Organic Material	Method 25A
Nitrogen Oxides	Method 7 or 19
Carbon Monoxide	Method 10
PM/PM_{10} (filterable)	Method 5 and 201 or 201A
PM_{10} (condensable)	Method 202

ii. As necessary to address variation in VOM emissions during the regeneration cycle, measurements for VOM shall be conducted during the beginning, middle and end phases of the regeneration of an adsorption bed, with multiple test runs during each phase.

iii. For VOM, if the Permittee intends for the affected combustor to comply with Condition 2.2.2(a) by reducing VOM emissions by at least 98 percent, measurements shall also be conducted as needed to determine the VOM entering the combustor in off-gas and fuel gas.

c. In conjunction with this emission testing, the Permittee shall conduct measurements of the VOM content of off-gas during the regeneration cycle, including the beginning, middle and end phases of the cycle. This data shall be included in the emission test report.

d. For this testing, the Permittee shall submit test plans to the Illinois EPA, notify the Illinois EPA of the planned timing of tests, and submit test reports to the Illinois EPA in accordance with Condition 3.1. For this purpose, in addition to other required information:

i. Test plans shall address the approaches that are proposed for emission testing to address the following, with detailed description and supporting justification:

A. The approach to ensure that testing for purposes of the hourly limits in Condition 2.2.2(a) and (b) and 2.2.6(a)(i) will appropriately address variation in emissions during regeneration, including any preliminary emission and/or operational measurements that will be conducted to identify these periods for different pollutants.

B. The approach to ensure that testing for purposes of the VOM limit in Condition 2.2.6(a)(ii) will address emissions over the course of regeneration, including any preliminary emission and/or operational measurements that will be conducted to identify the beginning, middle and end phases of the regeneration cycle to enable measurements that combine to provide emission data that is representative of overall emissions from the regeneration process.

C. The approach to ensure that testing will be conducted with levels of VOM loadings in the adsorption beds that are representative of the maximum loading that will normally occur.

ii. Test reports shall include a copy of the records required by Condition 2.2.9(a)(iv) and the following information for each regeneration cycle for which testing was conducted:

A. The identification of the adsorption bed that was being regenerated, the length of time and amount of LFG processed since the bed was last regenerated.

B. For the combustor: 1) The times when off-gas flow to the combustor began and ended; 2) The flow of off-gas (scf/hour) during each hour during the cycle; 3) Data for combustion chamber temperature, as measured by the monitoring system required by Condition 2.2.7; and 4) The value(s) of "average combustion chamber temperature" during testing as relevant to the records required by Condition 2.2.9(c)(ii)(C).

C. For the fuel burner in the combustor, the rates (mmBtu/hour) at which fuel gas was burned during each test run, the maximum rate at which fuel was burned during any hour, and the total amount of fuel burned during the regeneration cycle.

D. The SO_2 emissions during each test run (lbs/hour), as determined from operating data, with supporting calculations.

2.2.8 Operational Monitoring

a. For the combustion chamber of the affected combustor, the Permittee shall calibrate, maintain, and operate according to the manufacturer's specifications, a continuous temperature monitoring system having a minimum accuracy of ±1 percent of the temperature being measured expressed in °C.

b. The continuous data recorder that is part of this monitoring system shall record the following data:

   i. Short-term data, i.e., temperature on a 15 minute average, calculated from at least three readings during each period.

   ii. Long-term data, i.e., temperatures on a 3-hour average, based upon the above short-term data, rolled every 15 minutes.

2.2.9 Recordkeeping Requirements

a. The Permittee shall keep a file containing the following:

   i. The design specifications for the affected combustor including off-gas capacity (scfm) and a demonstration that the affected combustor is designed to comply with the requirements of Condition 2.2.2(a).

   ii. The operating and maintenance procedures for the affected combustor recommended by the manufacturer.

   iii. The Permittee's operation and maintenance procedures for the affected siloxane system and the affected combustor.

   iv. As related to the VOM emissions from regeneration of sorbent beds in the affected siloxane system: The greatest number of complete regeneration cycles that will occur in any month (N), based on the current composition of fuel gas and current operation procedures for this system, with supporting data and analysis; the allowable VOM emission rate for each regeneration cycle as calculate pursuant to Condition 2.2.6(a)(ii); and a demonstration that the actual VOM emission rate will not exceed the allowable rate, with supporting data and analysis.

b. The Permittee shall keep a log or other records identifying periods when the affected siloxane system is routinely being used to process fuel gas and periods when the affected system is not in use with explanation, e.g., temporary outage for maintenance or extended outage given low levels of siloxane in the fuel gas.

c. The Permittee shall keep the following records for the affected combustor:

   i. The number of regeneration cycles on a weekly basis.

ii. An operating log or other records that, at a minimum, shall include the information specified by Condition 3.2(a) and the following information:

A. For each regeneration cycle, the specific bed being regenerated and the times when off-gas flow to the combustor begins and ends.

B. Adjustments of the operating parameters for the regeneration cycle or the combustor.

C. All periods when off-gas was sent to the combustor and the following occurred, with a detailed explanation of the cause and an explanation of actions taken to prevent or reduce the likelihood of similar occurrences in the future:

1. The temperature in the combustion chamber, 3-hour average, was more than 28°C below the average temperature measured during the most recent performance test at which compliance with Condition 2.2.2(a) was demonstrated.

2. A flame was not present.

D. Identification of any period when the affected combustor was to be in service but was out of service.

iii. An inspection/maintenance log, which shall include the information specified by Condition 3.2(b).

iv. Records for deviations, which shall include the information specified by Condition 3.3(b).

d. The Permittee shall keep the following records related to emissions of CO, SO_2, PM, PM_{10}, VOM, HAPs and GHG (as CO_2e, excluding CO_2 from the combustion of gas generated from the biological decomposition of waste in the landfill) from the affected siloxane system (i.e., the affected combustor):

i. A file containing: 1) The emission factors used by the Permittee for calculating emissions of pollutants other than SO_2 from the combustor, with supporting documentation; 2) The maximum hourly emissions rates for pollutants other than SO_2, with supporting calculations; and 3) The maximum level(s) of sulfur in fuel gas at which compliance with the hourly SO_2 limit in Condition 2.2.6 and 35 IAC 214.301 is maintained, with supporting documentation and analysis.

ii. Records of actual hourly SO_2 emissions (lbs/hour), with supporting calculations, for each period when the combustor was fired with fuel gas whose sulfur content was greater

than the relevant value established in the above records pursuant to Condition 2.2.9(d)(i)(3).

iii. Records of the actual emissions of the affected combustor (tons/month and tons/year), with supporting calculations.

2.2.10 Notification and Reporting Requirements

If there is any deviation from the requirements of this permit, the Permittee shall notify the Illinois EPA in a quarterly report, unless otherwise specified in the CAAPP permit for the affected facility. The report shall include the information specified by Condition 3.4.

SECTION 2.3: UNIT-SPECIFIC CONDITIONS FOR ENGINES

2.3.1 Introduction

The affected facility will have six engine-driven electrical generators, each with a nominal capacity of about 2.7 MW. The engines (affected engines) will use collected landfill gas that has been treated for use as a fuel.

2.3.2 Control Technology Determination (BACT)

Each affected engine shall be designed and operated to comply with the following limits, in grams/horsepower-hour, which limits shall apply on a 3-hour average:

Pollutant	Limit
NOx	0.6
CO	2.5
PM	0.1
$PM_{10}/PM_{2.5}$	0.1
VOM	0.71

2.3.3-1 Applicable Federal Emission Standards for Engines

a. i. The affected engines are subject to the NSPS for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart JJJJ (the Engine NSPS) and related requirements of the NSPS, 40 CFR 60 Subpart A, General Provisions. Pursuant to the NSPS, the affected engines shall comply with the applicable emission standards in Table 1 of 40 CFR 60 Subpart JJJJ.

ii. The engines are 2010 model year or later stationary spark ignition internal combustion non-emergency engines and must comply with the following standards of the Engine NSPS for engines with rated power output greater than 500 hp. The engine must be installed and configured according to the manufacturer's specifications (40 CFR 60.4233(e)).

A. 2.0 g/hp-hour for NOx;

B. 5.0 g/hp-hour for CO; and

C. 1.0 g/hp-hour for VOC (excluding formaldehyde)

b. The Permittee shall comply with the applicable requirements of the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ (the Engine NESHAP) for the affected engines.

c. As the affected engines are subject to the Engine NSPS and Engine NESHAP, at all times, the Permittee shall, to the extent practicable, maintain and operate the affected engines, including the affected systems, in a manner consistent with safety and good air pollution control practice for minimizing

emissions, as required pursuant to 40 CFR 60.11(d) and 63.6(e)(3).

2.3.3-2 Applicable State Emission Standards

a. The affected engines are subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit, except as allowed by 35 IAC 212.123(b) and 212.124.

b. The affected engines are subject to 35 IAC 214.301, which limits emissions of SO_2 to no more than 2000 ppm.

2.3.4 Non-Applicability Provisions

a. This permit is issued based on the affected engines not being subject to the emission limitations of the NESHAP, 40 CFR 63 Subpart ZZZZ. This is because the engines would be fired with LFG as defined by 40 CFR 60.4248 and engines fired on LFG are not subject to the emission limitations of this NESHAP (40 CFR 63.6600(c). Rather, this NESHAP requires that such engines comply with the emission limitations of the NSPS, 40 CFR 60 Subpart JJJJ. (See Condition 2.3.3-1(a)(ii).)

b. This permit is issued based on the affected engines not being subject to the requirements of the federal Acid Rain Program because each affected engine meets the new unit utility exemption of 40 CFR 72.7(a). In particular, each engine will have a capacity that is less than 25 MWe and will burn gaseous fuel with an annual average sulfur content that is less than 0.05 percent by weight.

Note: The Permittee must demonstrate compliance to the new utility unit exemption by providing appropriate documentation and meeting all procedures required under 40 CFR 70.7(b), (d) and (f).

c. This permit is issued based on the affected engines not being subject to the requirements of 35 IAC Part 217, Subpart Q because at least 50 percent of the heat input to the engines is from gas collected from a landfill. [35 IAC 217.386(b)(3)]

d. This permit is issued based on the affected engines not being subject to the requirements of 35 IAC Part 212, Subpart L, because a process weight rate cannot be set, due to the nature of engines, so that these rules cannot reasonably be applied, pursuant to 35 IAC 212.323.

2.3.5 Operational Production Limits and Work Practices

a. i. Gas that has been treated in accordance with Condition 1.4(a) shall be the only fuel fired in the affected engines.

ii. Unless the sulfur content of LFG received from the landfill is no more than 130 ppm, all gas fired in the affected engines shall have undergone processing by the affected sulfur system (see Section 2.1 of this permit).

b. The maximum rated firing rate of each affected engine shall not exceed 26.01 mmBtu/hour (high heating value).

c. Pursuant to 40 CFR 60.4243(a), the Permittee shall operate and maintain the affected engines according to the manufacturer's written instructions and keep records of maintenance activity that is conducted.

d. Pursuant to 40 CFR 63.6625(h), for the affected engines, the Permittee must minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup in the Tables 1a, 2a, 2c, and 2d to the NESHAP, 40 CFR 63 Subpart ZZZZ, apply.

e. Pursuant to 40 CFR 63.6605(a), for the affected engines, the Permittee must be in compliance with the operational requirements in the NSPS, 40 CFR 60 Subpart JJJJ, and NESHAP, 40 CFR 63 Subpart ZZZZ, at all times.

f. i. Pursuant to 40 CFR 63.6605(b), for the affected engines, the Permittee must at all times operate and maintain each engine, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the Permittee to make any further efforts to reduce emissions if levels required by 40 CFR 63 Subpart ZZZZ have been achieved.

ii. Pursuant to 40 CFR 63.6625(c), the Permittee must operate in a manner which reasonably minimizes HAP emissions.

g. The various work practices of the NSPS, as addressed in Conditions 2.3.5(c) and (d), the recordkeeping requirements of the NSPS, as addressed in Conditions 2.3.10(a), and the reporting requirements of the NSPS, as addressed in Condition 2.3.11(a), shall also be implemented as a means to comply with limits for emissions of NOx, CO, VOM, PM/PM_{10} and total HAPs in Conditions 2.3.2 and 2.3.6, which limits are expressed in grams/horsepower hour and pounds/hour, respectively.

2.3.6 Emission Limits

a. The emissions from the affected engines shall not exceed the following. The hourly limits for NOx and SO_2 shall apply on a 1-hour average basis, except for purposes of emission testing as addressed by Condition 1.7(c). The hourly limits for other pollutants shall apply on a 3-hour average basis.

Pollutant	Limits		
	Pounds/Hour	Tons/Year	
		Each Engine	Total
NOx	5.0	21.8	130.8
CO	20.8	90.9	545.2
VOM	5.9	25.8	154.8
PM/PM_{10}	0.8	3.6	421.8
SO_2	1.19*	5.21	31.3
Total HAPs	3.6	15.8	95.0

* Notwithstanding the above, during upset of the affected sulfur system, total emissions of SO_2 from the engines shall not exceed 7.2 pounds/hour.

2.3.7 Emission Testing

a. The Permittee shall have performance testing conducted for the affected engine(s) for emissions of NOx, CO, PM, PM_{10} and VOM by a qualified independent testing service during conditions that are representative of maximum emissions as follows:

i. The timing for this testing shall be as follows:

A. Initial testing shall be conducted within 180 days after achieving the maximum operating rate at which engines will be operated, but not later than one year (365 days) after initial startup of an engine, emissions from the engine(s) shall be measured.

B. Within 90 days of a written request from the Illinois EPA, the Permittee shall perform testing for pollutants as specified by the Illinois EPA. The Illinois EPA may provide additional time for the performance of these tests upon written request by the Permittee.

ii. During measurements for filterable PM, the Permittee shall have concurrent observations conducted by a qualified observer(s) using USEPA Method 9 for the opacity of the exhaust of the engine that is being tested.

iii. Unless otherwise specified, each test shall consist of three separate runs each of at least 60 minutes in duration. For the purpose of determining, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Illinois EPA approval, be determined using the arithmetic mean of the results of the two other runs. [40 CFR 60.8(f)]

iv. The following USEPA methods and procedures shall be used for testing of emissions, unless another method is approved by the Illinois EPA as part of the review of its test plan:

Sample and Velocity Traverses	Method 1
Stack Gas Velocity and Volumetric Flow Rate	Method 2
Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight	Method 3
Moisture Content in Stack Gases	Method 4
Nitrogen Oxides	Method 7
Carbon Monoxide	Method 10
Volatile Organic Material	Method 18, 25A or 320
Filterable PM and PM_{10}	Method 5 and 201 or 201A*
Condensable PM	Method 202

* Following the initial performance testing, unless otherwise specified by the Illinois EPA in the request for further testing, the Permittee may use Method 5 to measure filterable emissions of PM_{10} provided that all PM measured by Method 5 shall be considered to be filterable PM_{10}.

v. For this emission testing, the Permittee shall submit test plans to the Illinois EPA, notify the Illinois EPA of the planned timing of tests, and submit test reports to the Illinois EPA in accordance with Condition 3.1. For this purpose:

A. In the test plan for the initial testing, the Permittee may propose an approach to testing of the engines that would provide for testing of as few as three engines.

B. In addition to other required information, test reports shall include the horsepower (hp) output during each test run, with supporting data and calculations, and the measured emission rates in grams/hp-hour (output).

b. i. For the affected engines, if performance tests for emissions of NOx, CO and VOM are required pursuant to the Engine NSPS, (for example, if the affected engines are non-certified by the manufacturer or the certified engines are not operated and maintained in accordance with the manufacturer's emissions-related written instructions), the Permittee shall comply with the applicable testing requirements of the NSPS, 40 CFR 60.8, 60.4243(b)(2)(ii) and 60.4244. In particular, pursuant to 40 CFR 60.4243(b)(2)(ii), within one year of startup and using the test methods specified in 40 CFR 60.4244, the Permittee shall have emissions tests conducted for the affected engines. In addition, subsequent performance testing must

be conducted every 8,760 hours or 3 years, whichever comes first.

ii. If performance testing is not required pursuant to the Engine NSPS, as provided above, performance testing shall be conducted at least every five years.

c. Upon written request, as specified by the Illinois EPA, the Permittee shall have the opacity of the exhaust from the affected engines during representative operating conditions determined by a qualified observer in accordance with USEPA Method 9, such testing shall be conducted for each affected engine within 45 calendar days of the request, or on the date the engine next operates, or on the date agreed upon by the Illinois EPA, whichever is later.

2.3.8 Operational Monitoring

Pursuant to 40 CFR 63.6625(c) and 63.6655(c), as treated landfill gas fuel will provide 10 percent or more of the gross heat input to the affected engines on an annual basis, the Permittee must monitor and record the fuel usage of each engine daily with separate fuel meters to measure the volumetric flow rate of each fuel and must keep records of the daily fuel usage.

2.3.9 Sampling and Analysis of Fuel Gas

The Permittee shall conduct sampling and analysis of the fuel gas burned in the affected engines as follows. Written notification of testing or submittal of test plans is not required for this activity.

a. The samples shall be analyzed for heat content (Btu/cubic foot) and, unless the Permittee is conducting monitoring for total sulfur content of the gas, the sulfur content (percent by volume) of the gas.

b. Until the initial evaluation program required by Condition 2.1.5(b) is completed, this sampling and analysis shall be conducted on a monthly basis. Thereafter, sampling and analysis shall be conducted on at least an annual basis, provided however, that if the calculated total sulfur content of the fuel gas on a day, as calculated using the current correlation equation developed pursuant to Condition 2.1.5(b), is more than 125 ppm (approximately 90 percent of the 140 ppm ceiling), a sample shall be taken within 30 days and analyzed, with additional sampling and analysis conducted if needed to fulfill this requirement.

c. The Permittee shall keep records for this sampling and analysis activity, including both collected data and documentation for the sampling and analysis activities.

2.3.10 Recordkeeping Requirements

a. For the affected engines, the Permittee shall comply with all applicable recordkeeping requirements of the Engine NSPS, including 40 CFR 60.4243(a)(1) and 60.4245(a) and (c); and the Engine NESHAP.

b. The Permittee shall maintain a file for each affected engine containing the following:

   i. Manufacturer's data for the affected engine, including emissions guarantees, horsepower rating, rated maximum fuel heat input, and design fuel consumption rate in Btu/hp or Btu/MW output, and the operating and maintenance procedures for the engines recommended by the manufacturer.

   ii. The written instructions being followed by the Permittee as good combustion practices and good air pollution control practice to minimize emissions in accordance with Condition 2.3.3-1(c).

c. The Permittee shall keep the following records for the affected engines:

   i. Records of the total fuel usage, on a daily basis.

   ii. An operating log that, at a minimum, shall include the information specified by Condition 3.2(a).

   iii. An inspection/maintenance log, which shall include the information specified by Condition 3.2(b).

   iv. Records for deviations, which shall include the information specified by Condition 3.3.

d. The Permittee shall maintain the following records related to emissions of NOx, CO, SO_2, PM, PM_{10}, VOM, total HAPs and GHG (as CO_2e, excluding biogenic CO_2) of the affected engines.

   i. A file containing: 1) The emission factors used by the Permittee to determine emissions of pollutants other than SO_2, with supporting documentation; 2) The maximum hourly emission rates of an individual engine for pollutants other than SO_2 (lbs/hour), with supporting calculations, and 3) The maximum level(s) of sulfur in fuel gas at which compliance with the hourly SO_2 limit in Condition 2.2.6 and 35 IAC 214.301 is maintained, with supporting documentation and analysis.

   ii. Records of actual hourly SO_2 emissions (lbs/hour) of each operating engine, with supporting calculations, for each period when the affected sulfur system operated improperly or this system was not operating if other than because the sulfur content of the incoming LFG is less than 140 ppm, as addressed by the records for this system required by Condition 2.1.6(c)(iv)(C).

iii. Records of actual emissions (tons/month and tons/year), based on actual operation and the appropriate emission factors (or for SO_2, actual fuel sulfur content), with supporting calculations.

iv. For the purpose of the records for SO_2 emissions required by Condition 2.3.10(d)(ii) and (iii), if the Permittee is not measuring the total sulfur content of the fuel gas pursuant to Condition 2.1.5(a), SO_2 emissions shall be calculated considering the total sulfur content of fuel gas fired in the engines, using data for the total sulfur content of fuel gas for periods when it is available from representative sampling and analysis, as required by Condition 2.3.9, or otherwise from the measured H_2S content of the fuel gas and the current correlation equation for the affected sulfur system, as developed in accordance with Condition 2.1.5(b), or from other credible data for the total sulfur content of the fuel gas.

2.3.11 Notification and Reporting Requirements

a. i. For the affected engines, the Permittee shall comply with the applicable notification and reporting requirements of the Engine NSPS and the Engine NESHAP, including 40 CFR 60.4245(c) and (d).

ii. Pursuant to 40 CFR 63.6645(f). if required to submit an Initial Notification but otherwise not affected by the requirements of the Engine NESHAP, in accordance with 40 CFR 63.6590(b), notification should include the information in 40 CFR 63.9(b)(2)(i) through (v), and a statement that the affected engine has no additional requirements and the basis of the exclusion must be explained.

b. Pursuant to 40 CFR 63.6650(g), as the affected engines fire LFG equivalent to 10 percent or more of the gross heat input on an annual basis, the Permittee must submit an annual report according to Table 7 of the Engine NSPS by the date specified unless the USEPA or Illinois EPA has approved a different schedule, according to the information described in 40 CFR 63.6650(b). This report must include the data specified in 40 CFR 63.6650(g)(1) through (3).

c. If there is any deviation from the requirements of this permit, the Permittee shall notify the Illinois EPA as follows, unless otherwise specified in the CAAPP permit for the affected facility. The report shall include information specified in Condition 3.4.

i. Deviations from NSPS and NESHAP requirements shall be reported in accordance with reporting requirements of these rules.

ii. Deviations from other requirements shall be reported in a quarterly report.

SECTION 3: GENERAL PERMIT CONDITIONS

CONDITION 3.1: GENERAL REQUIREMENTS FOR EMISSION TESTING

a. i. Except as provided below, by Condition 3.1(a)(ii), at least 60 days prior to the actual date of emission testing required by this permit, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include at a minimum:

A. The person(s) who will be performing sampling and analysis and their experience with similar tests.

B. The specific conditions, e.g., operating rate and control device operating conditions, under which testing shall be performed including a discussion of why these conditions will be representative and the means by which the operating parameters will be determined.

C. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations.

D. The test method(s) that will be used, with the specific analysis method if the method can be used with different analysis methods.

ii. As provided by 35 IAC 283.220(d), the Permittee need not submit a test plan for emissions testing that will be conducted in accordance with the procedures used for previous tests accepted by the Illinois EPA or the previous test plan submitted to and approved by the Illinois EPA, provided that the Permittee's notification for testing, as required below, contains the information specified by 35 IAC 283.220(d)(1)(A), (B) and (C).

b. i. The Permittee shall notify the Illinois EPA prior to performing emissions testing required by this permit to enable the Illinois EPA to observe the tests. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date, and identify the testing that will be performed. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of testing. Notwithstanding 40 CFR 60.8(d), the Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.

ii. This notification shall also identify the parties that will be performing testing and the set or sets of operating conditions under which testing will be performed.

c. Three copies of the Final Reports for emission tests shall be forwarded to the Illinois EPA within 30 days after the test results are compiled and finalized but not later than 90 days after the date

of testing. At a minimum, the Final Report for testing shall contain the following.

i. General information

ii. A tabular summary of results which includes:

- Process rates (e.g., gas usage rate or firing rate)
- Measured emission rates for different pollutants tested
- Emission factor, calculated using the average test results in the terms of the applicable limits, for example, in units of lbs pollutant emitted per mmBtu
- Compliance demonstrated - Yes/No

iii. Description of test method(s) and procedures, including a description of sampling points, sampling train, analysis equipment, and test schedule;

iv. Detailed description of test conditions, including:

- Pertinent process information (e.g., usage of fuel and composition.)
- Control equipment information (i.e., monitored data and other relevant operating parameters during testing).

v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.

vi. The results of all quality control evaluations, with a copy of all qualified data.

d. Records of the initial performance test, including operating parameters monitored during the test, shall be kept for the life of the unit. Records of subsequent tests shall be maintained for a minimum of five years.

CONDITION 3.2: GENERAL REQUIREMENTS FOR "LOGS" OR SIMILAR RECORDS

a. Operating logs or other similar records required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:

i. Information identifying periods when an emission unit or group of related emission units was not in service.

ii. For periods when a unit or group of related units is in service and operating normally, relevant process and control system information to generally confirm normal operation.

iii. For periods when a unit or group of related units is in service and is not operating normally, identification of each such period, with detailed information describing the operation of the unit(s), the potential consequences for additional emissions from the unit(s), the potential of any excess emissions from the affected unit(s), the actions taken to restore normal operation, and any actions taken to prevent similar events in the future.

iv. Other information as may be appropriate to show that the emission unit or group of related emission units is operated in accordance with good air pollution control practices.

b. Inspection, maintenance and repair logs or other similar information required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:

i. Identification of equipment, with date, time, responsible employee and type of activity.

ii. For inspections, a description of the inspection, findings, and any recommended actions, with reason.

iii. For maintenance and repair activity, a description of actions taken, reason for action (e.g., preventative measure or corrective action as a result of inspection), probable cause for requiring maintenance or repair if not routine or preventative, and the condition of equipment following completion of the activity.

iv. Other information as may be appropriate to show that the emission unit or group of related emission units is maintained in accordance with good air pollution control practices, including prompt repair of defects that interfere with effective control of emissions.

c. The logs required by this permit may be kept in manual or electronic form, and may be part of a larger information database maintained by the Permittee provided that the information required to be kept in a log is readily accessible.

CONDITION 3.3: GENERAL REQUIREMENTS FOR RECORDKEEPING FOR DEVIATIONS

Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, records for deviations from applicable requirements shall include at least the following information: the date, time and estimated duration of the deviation; a description of the deviation; the manner in which the deviation was identified, if not readily apparent; the probable cause for deviation, if known, including a description of any equipment malfunction or breakdown associated with the deviation; information on the magnitude of the deviation, including actual emissions or performance in terms of the applicable standard if measured or readily estimated; confirmation that standard procedures were followed or a description of any event-specific corrective actions taken; and a description of any preventative measures taken to prevent future occurrences, if appropriate.

CONDITION 3.4: GENERAL REQUIREMENTS FOR REPORTING OF DEVIATIONS

a. The Permittee shall include the following information in records and reports for deviations:

   i. Identity of the deviation, with date, time, duration and description.

   ii. Describe the effect of the deviation on compliance, with an estimate of the excess emissions that accompanied the deviation, if any.

   iii. Describe the probable cause of the deviation and any corrective actions or preventive measures taken.

b. i. Unless otherwise specified in a particular condition of this permit, if deviation(s) from requirements of this permit occurs during a reporting period, a compliance report shall be submitted no later than 45 days after the end of the reporting period. This report shall also provide a listing of all deviations for which immediate or 30-day reporting was required, but need not include copies of the previously submitted information.

   ii. If there are no deviations during a reporting period, the Permittee shall still submit a compliance report, which report shall state that no deviations occurred during the reporting period.

c. i. For the purpose of determining whether a deviation must be reported prior to a periodic compliance report, a deviation shall be considered to continue even if operation of an emission unit is interrupted if the deviation is still present when operation of the unit is resumed.

   ii. When this permit requires immediate notification, such notification shall be provided by telephone and followed by facsimile or e-mail transmittal of a narrative report.

d. Upon issuance of a CAAPP permit for the affected facility, the provisions of the CAAPP permit with respect to reporting of deviations will supersede the requirements of this permit for reporting of deviations.

ATTACHMENTS

ATTACHMENT 1: SUMMARY OF PERMITTED EMISSIONS OF THE AFFECTED FACILITY (TONS/YEAR)

Pollutant	Siloxane Removal System (Combustor)	Engines	Lubricating Oil Tanks	Road Traffic	Annual Limits
NOx	4.8	130.8	---	---	135.6
CO	12.0	545.2	---	---	557.2
VOM (NMOC)	3.4	154.8	0.40	---	158.6
SO_2	3.1	31.3	---	---	34.3
PM/PM_{10}	5.4	21.8	---	0.33/0.09	27.6/27.3
Total HAPs	0.4	95.0	---	---	95.4

ATTACHMENT 2: FORM OF THE CORRELATION BETWEEN THE H_2S CONTENT AND TOTAL SULFUR CONTENT OF FUEL GAS

The form of the equation that provides the correlation between the H_2S content and the total sulfur content of fuel gas shall be as follows:

$S_t = S_h + C$, or

$S_t = S_h + C + C_I S_h$, if the sulfur removal system serves to remove a statistically significant portion of sulfur compounds other than H_2S from the fuel gas

Where,

S_t is the total sulfur content of the gas, ppm.

S_h is the H_2S content of the gas, ppm.

C is a constant that accounts for sulfur compounds in the fuel gas other than H_2S that are not controlled by the sulfur removal system.

C_I is a constant, in ppm, that accounts for incidental control by the sulfur removal system of sulfur compound in the fuel gas other than H_2S.

ATTACHMENT 3: STANDARD PERMIT CONDITIONS

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Illinois Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, has been submitted to the Illinois EPA and a supplemental written permit issued.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA, upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit;

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. To obtain and remove samples of any discharge or emissions of pollutants; and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;

   b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;

   c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;

   d. Does not take into consideration or attest to the structural stability of any units or parts of the project; and

   e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.

b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit,

   a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or

   b. Upon finding that any standard or special conditions have been violated; or

   c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.